



# Water Quality Assessment and Impaired Waters Reports

Virginia Department of  
Environmental Quality

January 2003



# Background

- Clean Water Act and the Virginia Water Quality Monitoring, Information and Restoration Act require state to assess and report on the quality of state waters.
- 2000 - most recent 305(b) Water Quality Assessment
- 1998 - most recent 303(d) Report on Impaired Waters

# Public Comment

- Public comment was received July 15 - August 16, 2002
- Download 305(b) and 303(d) reports via DEQ website
  - <http://www.deq.state.va.us/water/305b.html>
  - <http://www.deq.state.va.us/water/303d.html>
- 3 public meetings held around Virginia
- Comments were received by first class mail to:
  - Darryl M. Glover, DEQ Water Quality Monitoring and Assessment Manager, P.O. Box 10009, Richmond, Virginia 23240-0009
- and via e-mail to [dmglover@deq.state.va.us](mailto:dmglover@deq.state.va.us).

# 2002 Assessment Approach

## Type of Data Used

- Monitored Data:
  - collected during the 1996 - 2000 period
  - from 1680 of DEQ's monitoring stations and
  - approximately 2,700 additional federal, state, and/or citizen monitoring stations
  - includes the analysis of conventional and toxic water column samples, sediment samples, fish tissue samples and biological assays.
- Evaluated Data:
  - based on data associated with land use, point source discharges, nonpoint source pollution potential, fishery information, staff knowledge, and/or any other relevant water quality information.

# 2002 Assessment Approach

- Used Quality Assurance/Quality Control procedures for “other” data generators as a way to help bolster monitoring throughout the state
- Used EPA National Hydrography Database (NHD) for stream segment delineation - resulted in slight adjustment to total state stream miles
- Significant changes to Assessment Guidance, included:
  - Waters considered impaired if fish tissue screening levels exceeded, not just waters with fish advisories. This is more protective of the public.
  - Estuarine benthic index of biological indicators (B-IBI)
  - Weight of evidence approach for estuarine toxics assessment

# 2002 305(b) Report

## Assessed Miles

- Total River Miles - 50,415
  - Monitored - 9,805
  - Evaluated - 40,610
- Total Lakes in Acres - 148,462
  - Monitored 127,618
  - Evaluated 20,844
- Total Estuary in Square Miles - 2,462
  - Monitored - 2,140
  - Evaluated - 322

## 2002 SUMMARY of ASSESSED WATERS

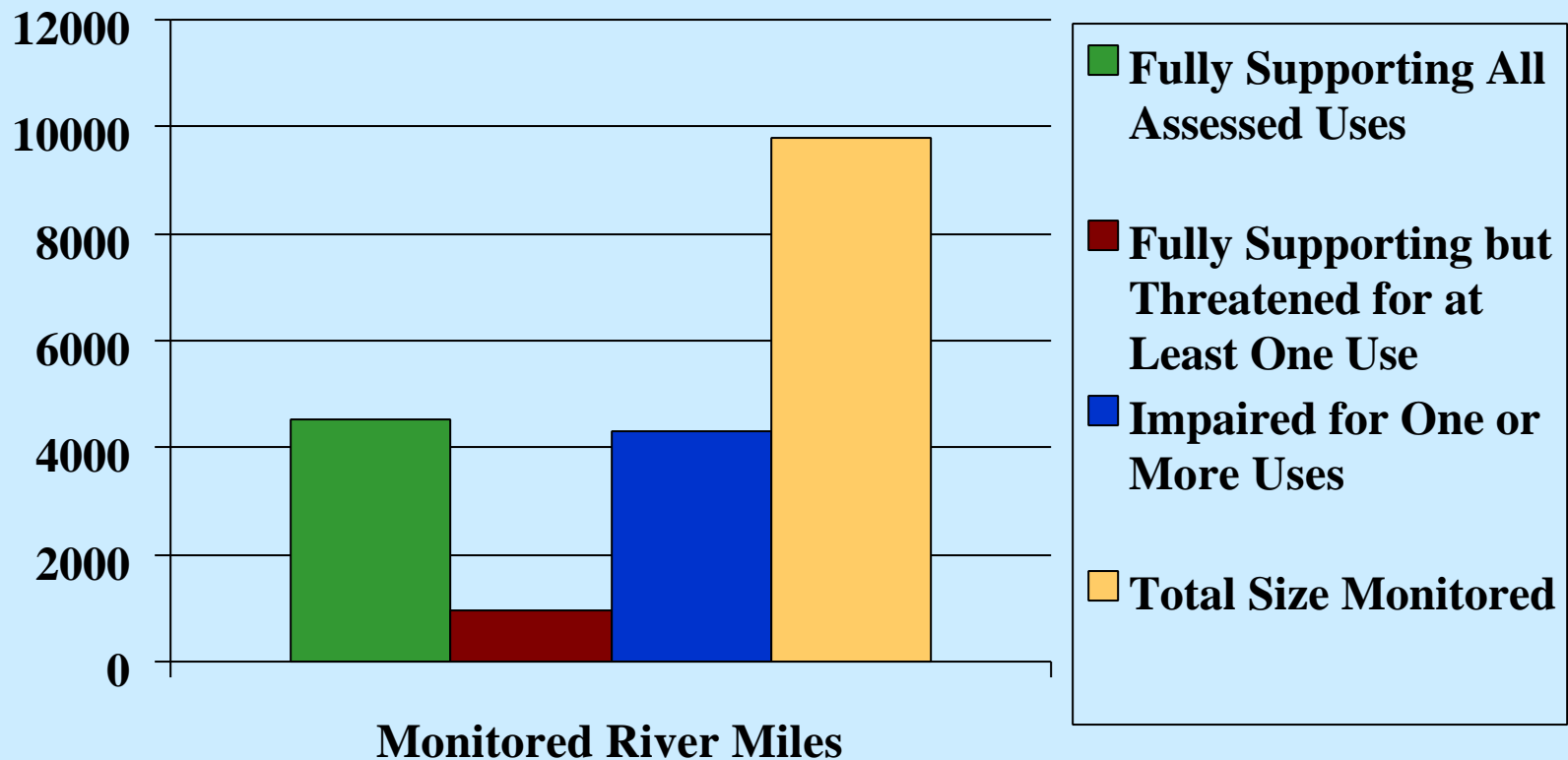
Degree of Use Support	Type	Assessment Category		Total Assessed Size
		Evaluated	Monitored	
Size <u>Fully Supporting All Assessed Uses</u>	R	36,129.11	4,540.54	40,669.65
	L	11,516.63	9,334.84	20,851.47
	E	126.65	23.25	149.90
Size Fully Supporting All Assessed Uses but <u>Threatened</u> for at Least One Use	R	3,963.70	943.88	4,907.58
	L	9,144.77	2,907.83	12,052.60
	E	165.32	495.64	656.73
Size <u>Impaired</u> for One or More Uses	R	516.86	<b>4,320.80</b>	4,837.66
	L	182.00	<b>115,375.71</b>	115,557.71
	E	34.17	<b>1,621.41</b>	1,655.58
Total Assessed for One or More Uses	R	40,609.67	<b>9,805.22</b>	50,414.89
	L	20,843.40	<b>127,618.40</b>	148,461.80
	E	322.28	<b>2,139.93</b>	2,462.21

R = River - miles

L = Lake - acres

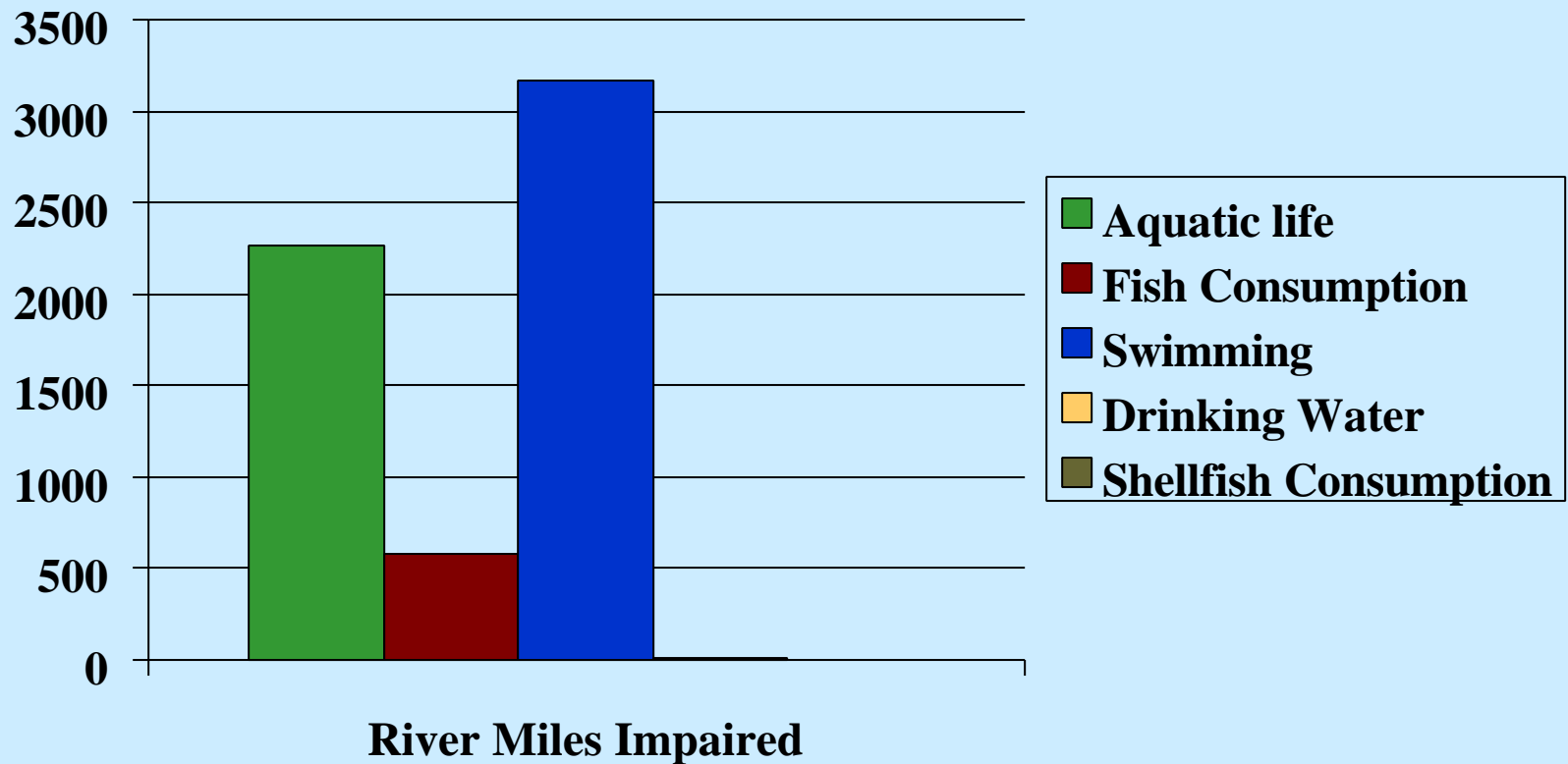
E = Estuary - square miles

# Summary of Monitored Waters for 2002 (Rivers)

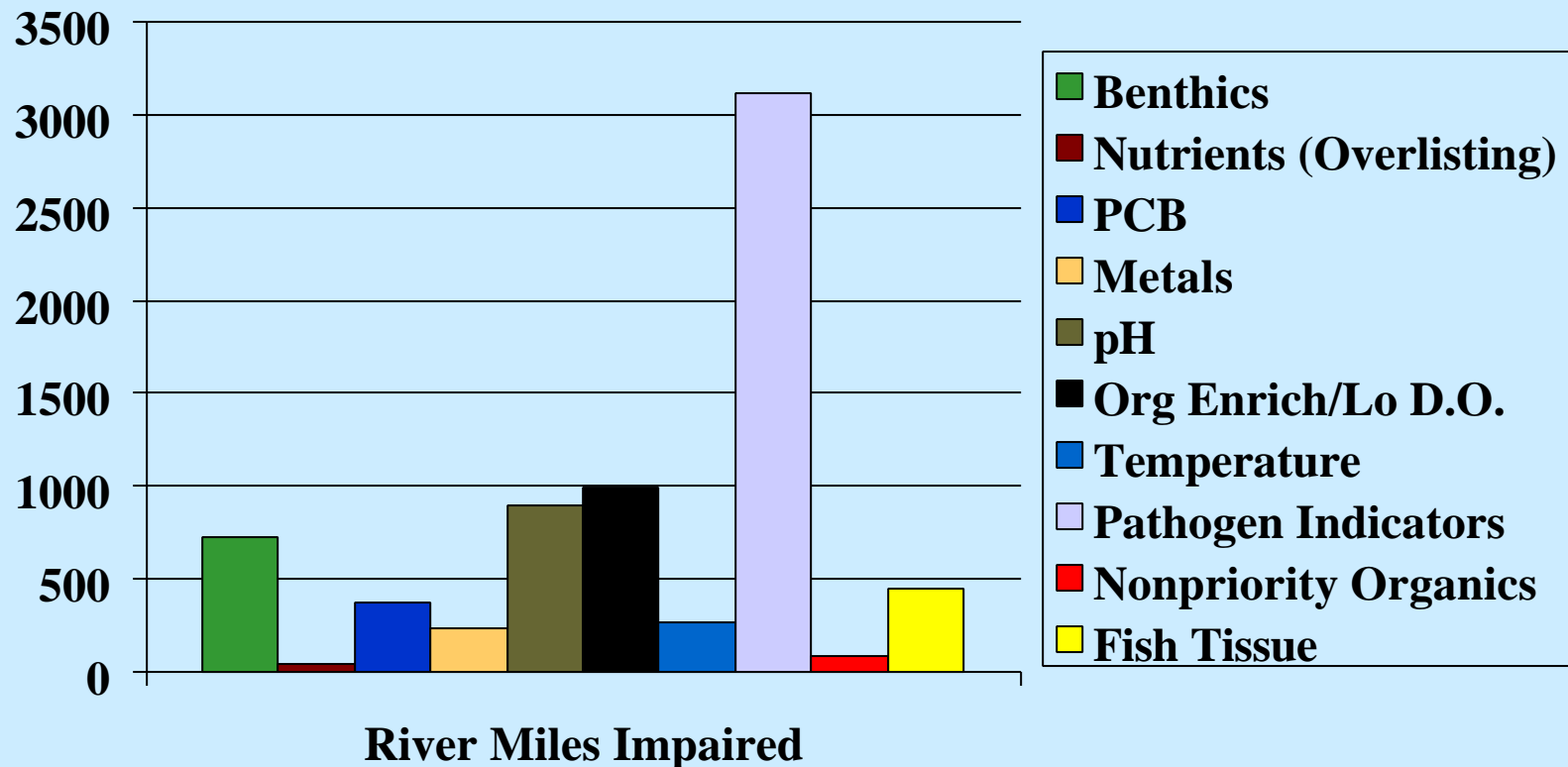




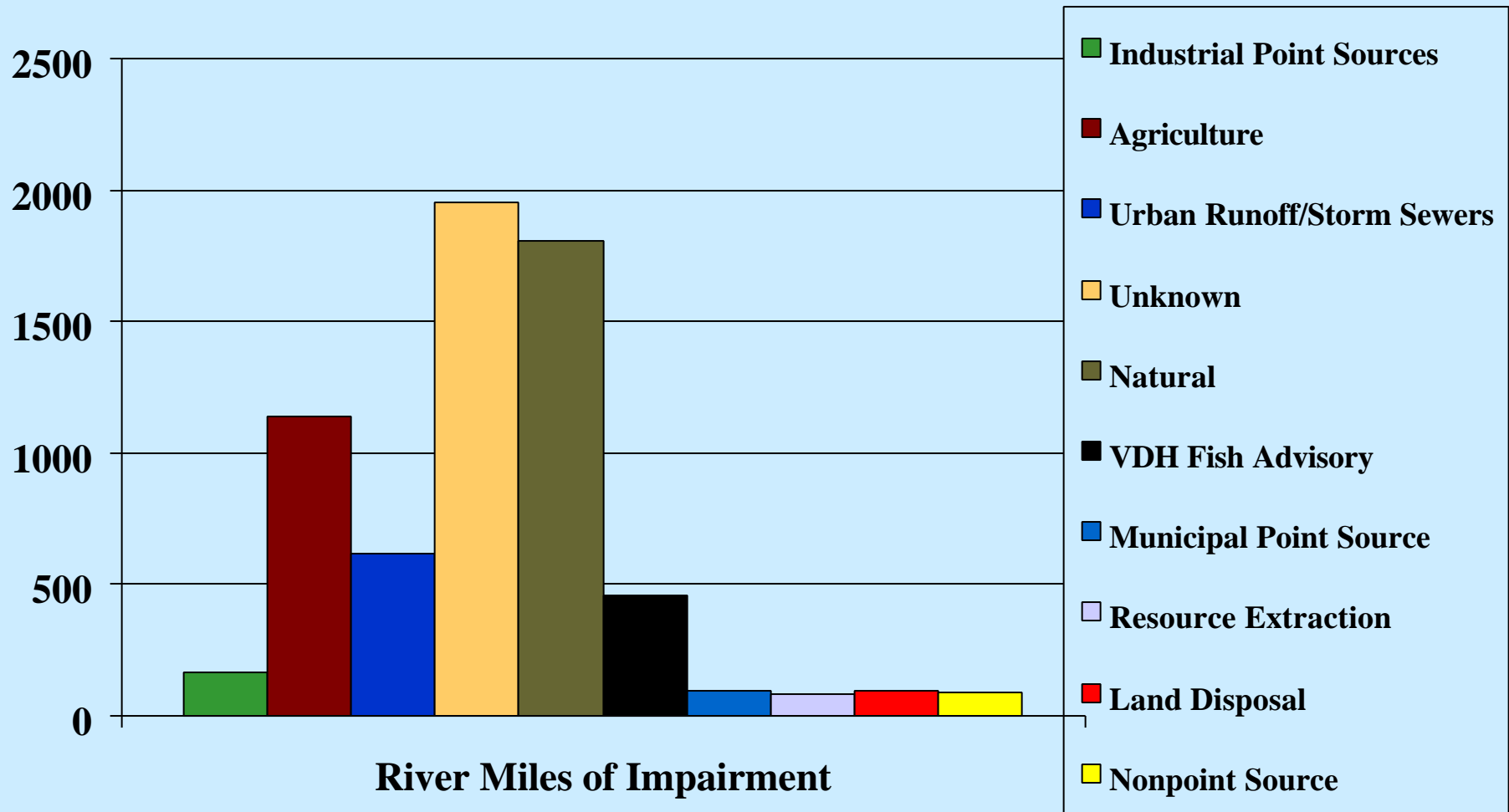
# Designated Use Impairment Summary for 2002 (Rivers)



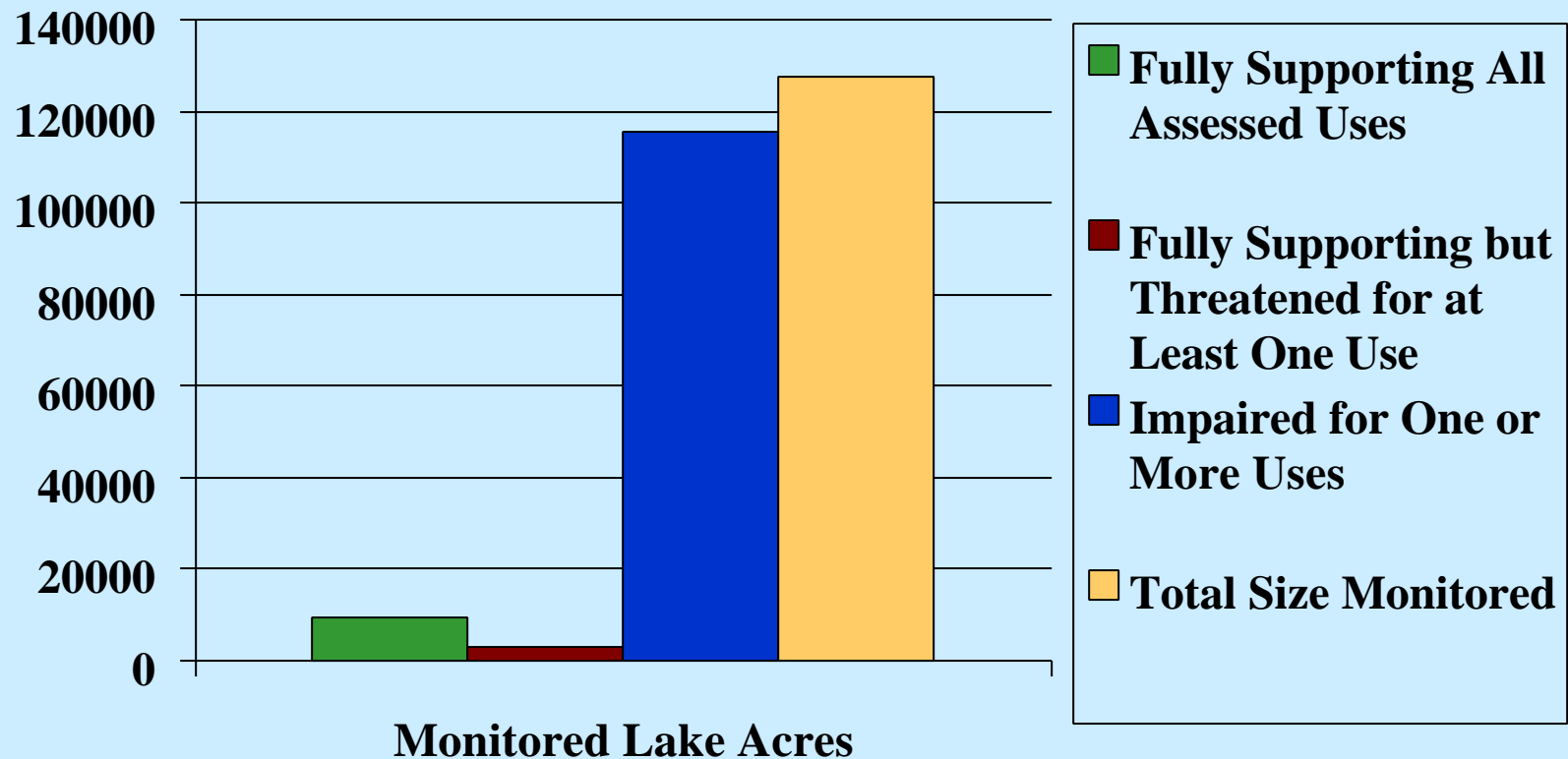
# Top 10 Causes of Impairment for 2002 (Rivers)



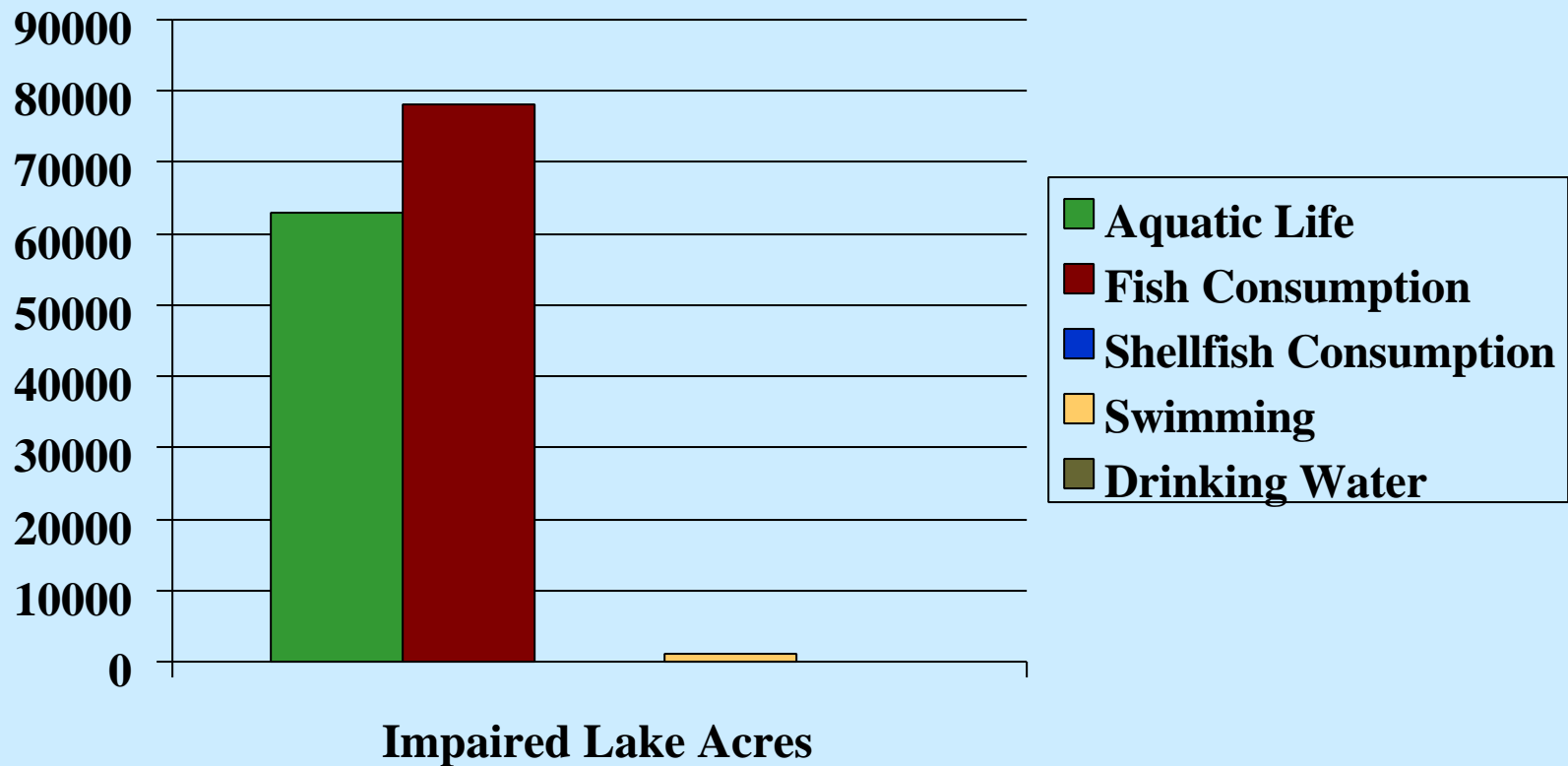
# Top 10 Sources of Impairment for 2002 (Rivers)



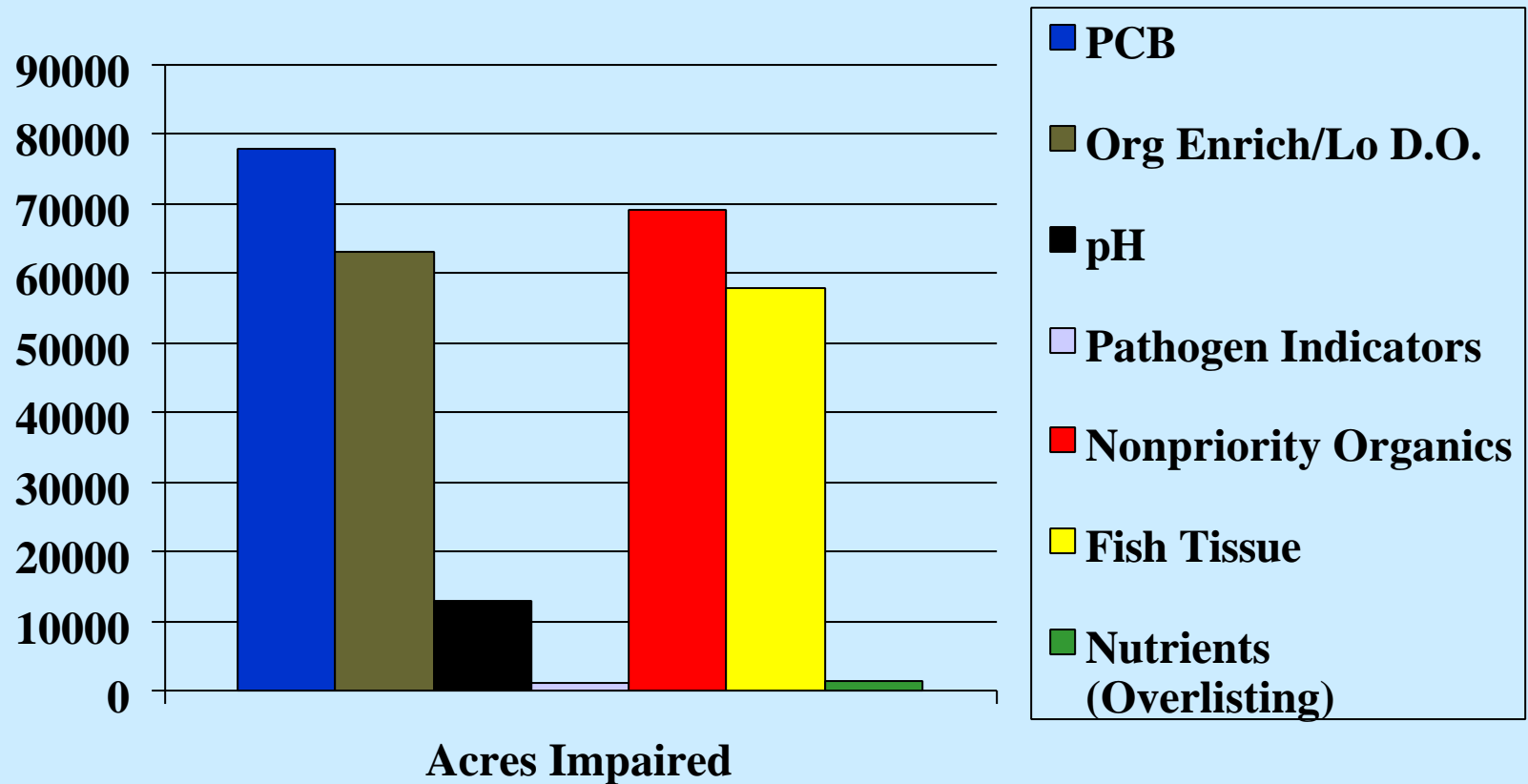
# Summary of Monitored Waters for 2002 (Lakes)



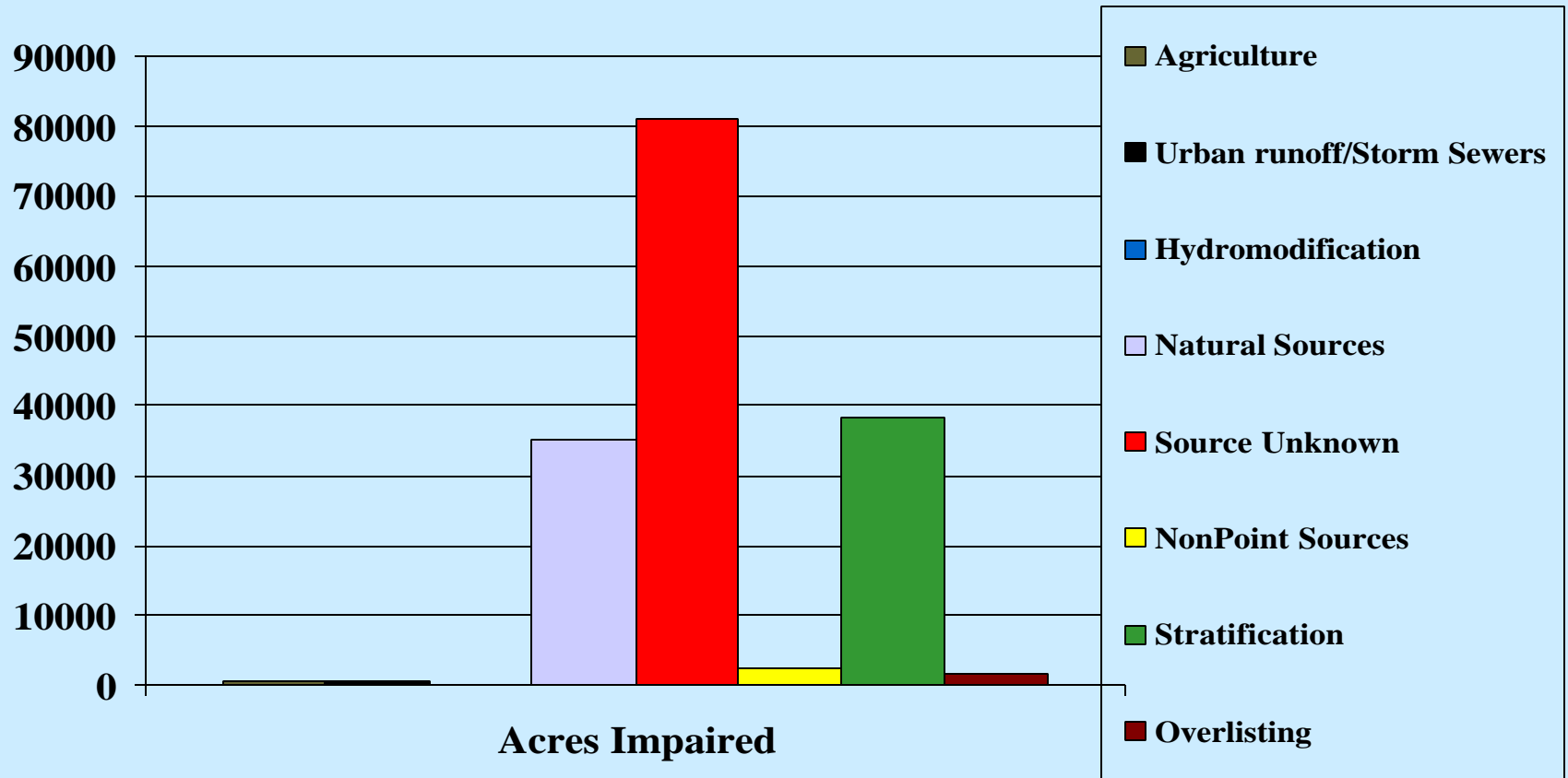
# Designated Use Impairment Summary for 2002 (Lakes)



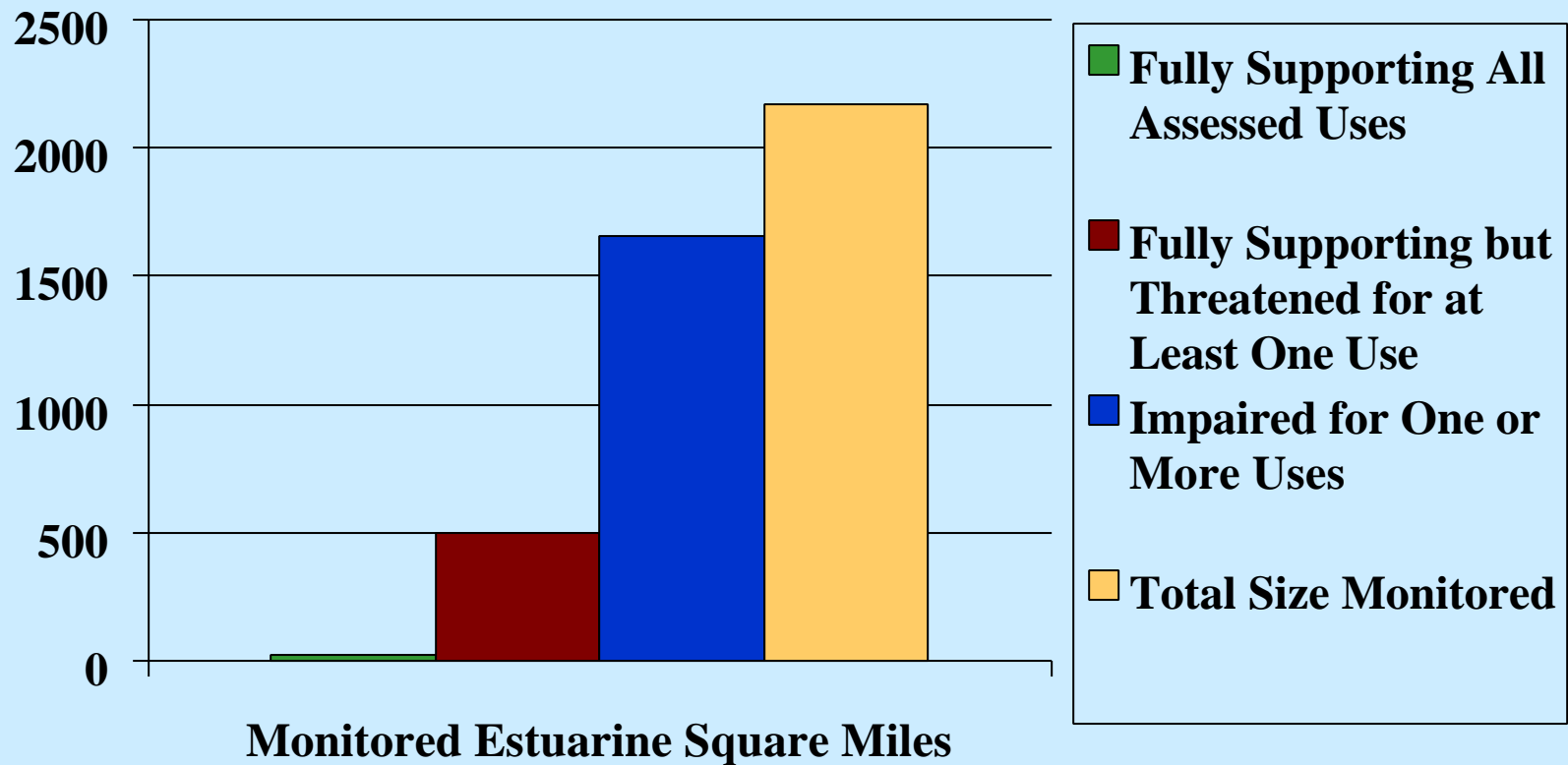
# Top Causes of Impairment for 2002 (Lakes)



# Top Sources of Impairment for 2002 (Lakes)

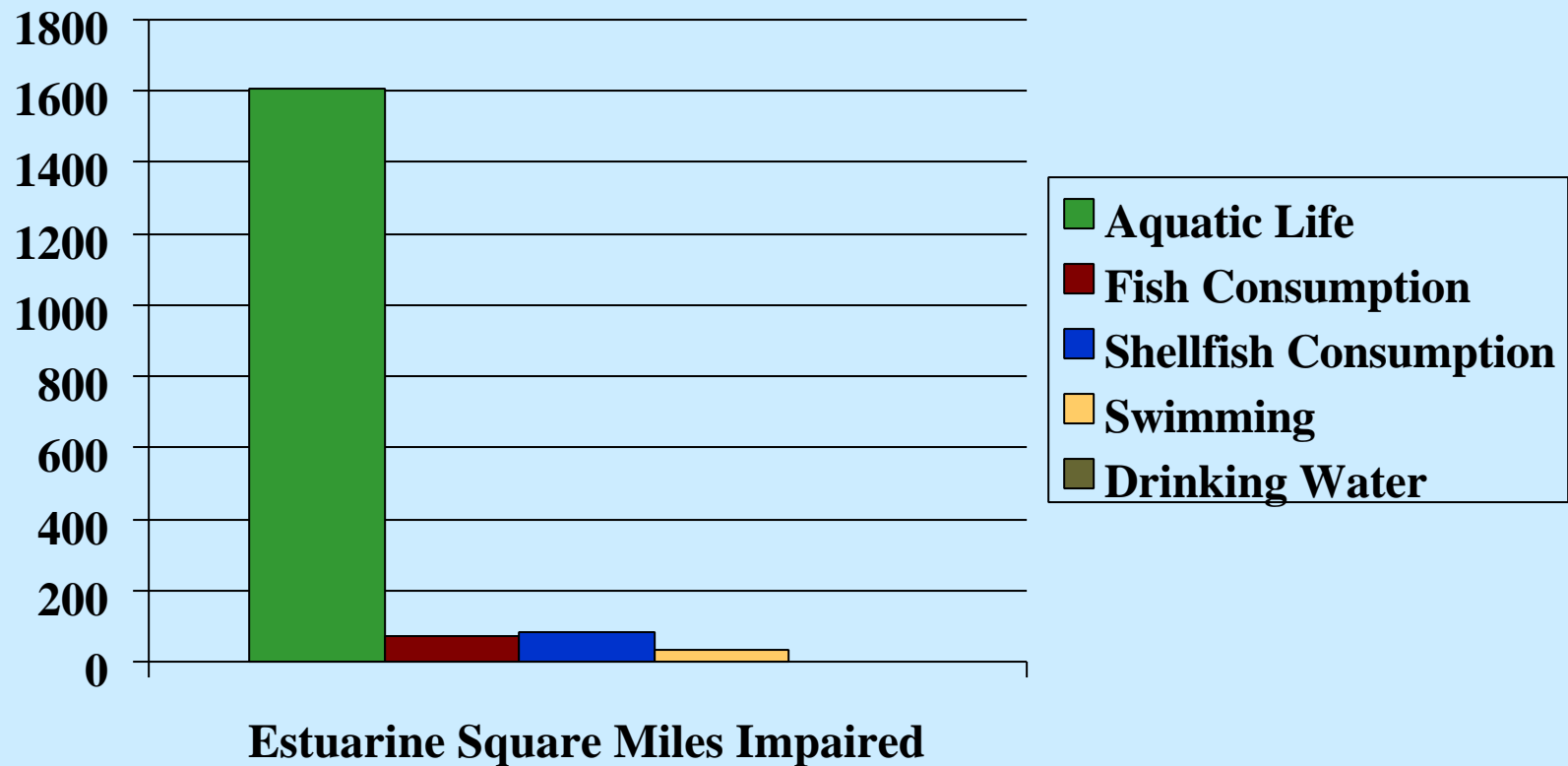


# Summary of Monitored Waters for 2002 (Estuarine)

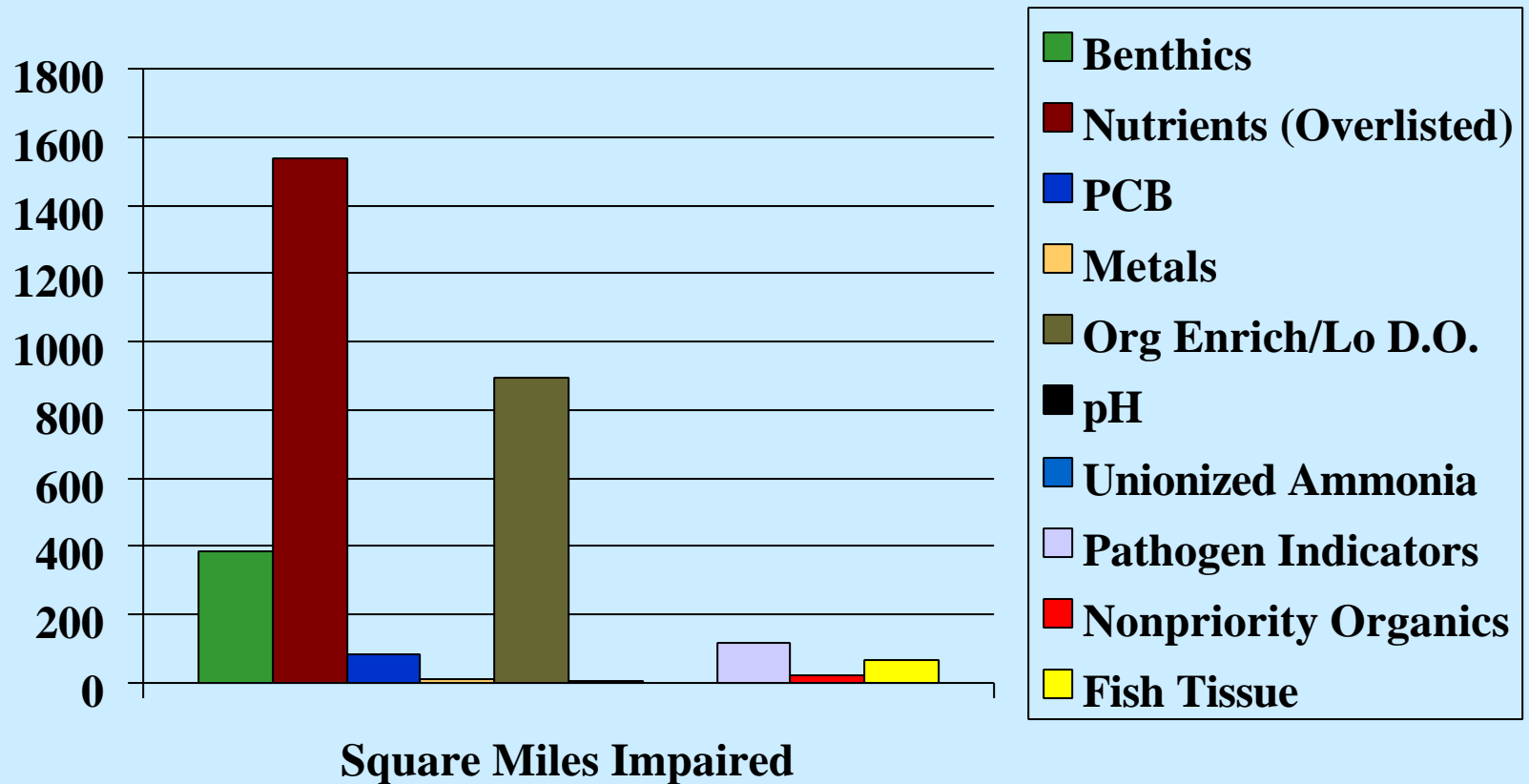




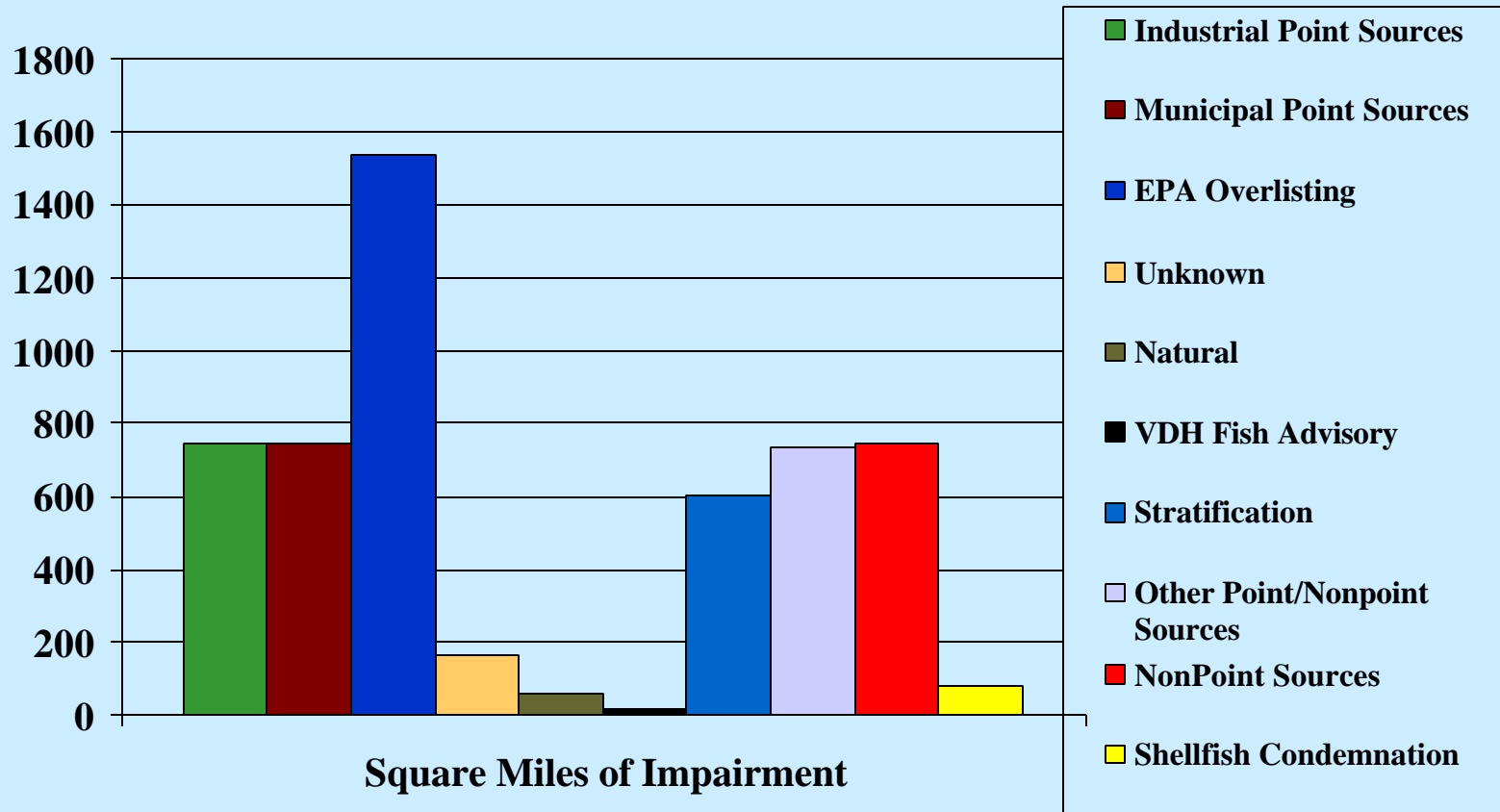
# Designated Use Impairment Summary for 2002 (Estuarine)



# Top 10 Causes of Impairment for 2002 (Estuarine)



# Top 10 Sources of Impairment for 2002 (Estuarine)



# 2002 Impaired Waters List

- Part I, Divided Into Three Sections
  - Part 1A - segments impaired for uses other than shellfish consumption and require development of a TMDL
  - 662 impaired segments (majority due to fecal coliform bacteria)
  - Part 1B - impaired for shellfish and require a TMDL
  - 313 impaired segments for shellfish consumption
  - Part 1C - impaired partially or wholly due to natural causes, further study needed to determine if a TMDL is applicable
  - 115 impaired segments due to natural conditions

# 2002 Impaired Waters List

- Part II
  - Considered impaired until discharge permits meet water quality standards
  - 369 discharge permit related listings
  - All Part II segments will be in compliance by 2007

## Plaintiff's List (part of 1999 Consent Decree)

- 1999 Plaintiff's Waters = 200 total
  - 82 (delist candidates), 98 now in (1A), 12 now in (1C), 1 (Water of Concern) and 7 (not yet assessed)

# History of Impaired Segments

Does not include Part 1B, Part 1C, or Part II Segments

**Impaired Segments Reported in Part 1A,  
Initial Year Listed, 1994 - 2002**

<b>Year and Number of Impaired Segments</b>	<b>1994</b>	<b>1996</b>	<b>1998</b>	<b>2002</b>	<b>TOTALS</b>
Estuaries	6	12	25	55	98
Rive rs & Stre a m s	42	98	135	267	542
Lake s	0	0	3	19	22
<b>Totals</b>	<b>48</b>	<b>110</b>	<b>163</b>	<b>341</b>	<b>662</b>

# Principal Factors Affecting 2002 List of Impaired Waters

- 341 Additions to 2002 Impaired Waters List due mainly to:
  - 1999 Plaintiff's List added 98 segments to list
  - Exceedence of fish tissue screening values added 25 segments to the list as sole/primary impairment
  - 41 Dissolved Oxygen violations and 209 Fecal Coliform Bacteria violations (future assessments will use E. coli - freshwater, and Enterococci - salt water)
- 2002 Assessment results more similar to 2000 Assessment than to the 1998 Impaired Waters List
- Use of EPA 10% method with two or more exceedences

# Delisting of Segments

- 389 total delist candidates which include:
  - 82 from 1999 Plaintiff's List
  - 26 from 1998 Part 1A (2 are partial)
  - 55 from 1998 Part 1B,
  - 1 from 1998 Part 1C
  - 225 from 1998 Part II



# *Steps in TMDL Process*

- Place Impaired Waters on 303(d) List due to Water Quality Standards violations
- **Develop TMDL - Total Maximum Daily Load - for Impaired Waters**
- Develop TMDL Implementation Plan
- Implement TMDL Plan
- Remove Waters from 303(d) List when Water Quality Standards achieved

# Consent Decree TMDL Development Schedule

<b>DEQ TMDL Submittal Dates</b>	<b>Consent Decree Schedule For Impaired Segments (See Note)</b>	<b>Credit Limit for Waters Removed From List</b>
<b>5/1/99</b>	<b>1</b>	<b>0</b>
<b>5/1/00</b>	<b>12</b>	<b>2</b>
<b>5/1/02</b>	<b>30</b>	<b>6</b>
<b>5/1/04</b>	<b>83</b>	<b>11</b>
<b>5/1/06</b>	<b>208</b>	<b>13</b>
<b>5/1/08</b>	<b>131</b>	<b>14</b>
<b>5/1/10</b>	<b>179</b>	<b>14</b>
<b>TOAL</b>	<b>644</b>	<b>60</b>

Note: table includes 2002 estimates for shellfish impairments and plaintiff's waters.